

What is claimed is:

1. An electronic alternating-current regulator for supplying a high-voltage direct current for activating a discharging light tube for steady illumination, comprising a power circuit, a voltage control circuit, an activation circuit, an over-voltage/leakage protection circuit and a load circuit; wherein:
the power circuit is connected to an alternating current, and is consisted of an LC voltage-regulating circuit and a bridge rectification circuit, thereby transforming the alternating current into
10 a direct current;
- the voltage control circuit is connected to an output end of the bridge rectification circuit of the power circuit, and utilizes a power factor rectification integrated circuit (IC), an inductor and a transistor to control an output voltage of the direct current;
- 15 the activation circuit is connected in parallel with positive and negative ends behind the voltage control circuit; and has at least two serially connected transistors, a bi-directional thyrator connected to a base of the first transistor and an RC circuit, thereby controlling the current passing through the first transistor and the second transistor;
- 20 the load circuit has at least one light tube, which has an output end

- of a first side thereof connected to a positive end of the voltage control circuit, and an output end of a second side connected to a node of an emitter and collector of the serially connected transistors of the activation circuit via inductors; and is connected in series to a
- 5 pre-warming activation matching circuit located between an output end of the first side and an input end of the second side of the light tube.
2. The electronic alternating-current regulator in accordance with claim 1, wherein the load circuit has two light tubes to form a set; an input
- 10 end of a first side of a first light tube is connected to a positive end of the voltage control circuit; an output end of a second side of a second light tube is connected to a node of an emitter and a collector of the two serially connected transistors of the activation circuit via the inductors connected in series; a pre-warming activation matching circuit is connected in series between an output
- 15 end of the first side of the first light tube and an input end of the second side of the second light tube; a secondary side coil of the inductor is connected in series between the second side of the first light tube and a first side of the second light tube.
- 20 3. The electronic alternating-current regulator in accordance with claim

- 1, wherein the load circuit has two light tubes connected in parallel to form a set having one more light tube connected in parallel; an input end of a first side of a light tube is connected to a positive end of the voltage control circuit; an output end of a second side of a second
- 5 light tube is connected to a node of an emitter and a collector of the two serially connected transistors of the activation circuit via the inductors connected in series; and a pre-warming activation matching circuit is connected in series between an output end of the first side of the first light tube and an input end of the second side of
- 10 the second light tube.
4. The electronic alternating-current regulator in accordance with claim 2, wherein the load circuit has two light tubes connected in parallel to form a set connected in parallel to another set having two light tube connected in parallel; an input end of a first side of a first light tube of
- 15 the latter set is connected to a positive end of the voltage control circuit; an output end of a second side of a second light tube is connected between the two inductors in series connection with an output end of a second side of the former set via an inductor; a pre-warming activation matching circuit is connected in series between an output end of a first side of the first light tube and an
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input end of a second side of the second light tube; and the second side of the first light tube and the first side of the second light tube are connected in series to a secondary side coil of the inductor.

5. The electronic alternating-current regulator in accordance with claim

5 1, wherein the pre-warming activation matching circuit is consisted of a variable capacitor and a capacitor connected in parallel, such that the current is passed through with delay using shielding of the variable capacitor and the capacitor to accomplishing pre-warming effects.

10 6. The electronic alternating-current regulator in accordance with claim

2, wherein the pre-warming activation matching circuit is consisted of a variable capacitor and a capacitor connected in parallel, such that the current is passed through with delay using shielding of the variable capacitor and the capacitor to accomplishing pre-warming

15 effects.

7. The electronic alternating-current regulator in accordance with claim

3, wherein the pre-warming activation matching circuit is consisted of a variable capacitor and a capacitor connected in parallel, such that the current is passed through with delay using shielding of the

20 variable capacitor and the capacitor to accomplishing pre-warming

effects.

8. The electronic alternating-current regulator in accordance with claim 4, wherein the pre-warming activation matching circuit is consisted of a variable capacitor and a capacitor connected in parallel, such that the current is passed through with delay using shielding of the variable capacitor and the capacitor to accomplishing pre-warming effects.
9. The electronic alternating-current regulator in accordance with claim 1, wherein an over-voltage / leakage protection circuit is connected in parallel between the voltage control circuit and the activation circuit, and has a PNP transistor (one-directional transistor) disposed between the first transistor and the base end of the bi-directional thyrator of the activation circuit, thereby having the PNP transistor serve as a protection switch over operations of the activation circuit.
10. The electronic alternating-current regulator in accordance with claim 2, wherein an over-voltage / leakage protection circuit is connected in parallel between the voltage control circuit and the activation circuit, and has a PNP transistor (one-directional transistor) disposed between the first transistor and the base end of the

bi-directional thyrator of the activation circuit, thereby having the PNP transistor serve as a protection switch over operations of the activation circuit.

11. The electronic alternating-current regulator in accordance with claim

5 3, wherein an over-voltage / leakage protection circuit is connected in parallel between the voltage control circuit and the activation circuit, and has a PNP transistor (one-directional transistor) disposed between the first transistor and the base end of the bi-directional thyrator of the activation circuit, thereby having the
10 PNP transistor serve as a protection switch over operations of the activation circuit.

12. The electronic alternating-current regulator in accordance with claim

4, wherein an over-voltage / leakage protection circuit is connected in parallel between the voltage control circuit and the activation circuit, and has a PNP transistor (one-directional transistor) disposed between the first transistor and the base end of the bi-directional thyrator of the activation circuit, thereby having the
15 PNP transistor serve as a protection switch over operations of the activation circuit.